prevent pain. Ethyl chloride is then sprayed on to the gauze on and off for 45 seconds. The amounts we have used vary between 4 and 9 c.cm., the average being about 6 c.cm. If the eyelids are seen to flicker the patient is ready; otherwise it is better to rely on the time period entirely. The gauze is pushed aside and the operation completed. The gauze is then removed and the patient asked to take one or two deep breaths; by the time he has rinsed his mouth out he is ready to leave the chair.

Of the 90 cases 70 were dental extractions and 20 were minor operative procedures, mainly incisions of abscesses. In all cases analgesia was achieved; there were no post-operative complications. The dental cases were not confined to single extractions of upper and lower incisors, as 33% were molars or pre-molars. In several cases a number of teeth were removed, in one case seven. The majority of cases were those in which local anaesthesia was contraindicated. Many of the cases were those in which the patient was a difficult subject, being uncooperative and fearful, as this was his first visit to a dental surgery.

Comment

The advantages of ethyl chloride are many. It is a safe and rapid agent (Hewer, 1930) requiring no apparatus. The method is simple to learn and easy to apply. By Lincoln's (1941) technique of oral breathing induction is pleasant; there is the psychological benefit of having no mask, and there is no struggling—not even by the anaesthetic-resistant patient.

Total analgesia lasts from 60 to 120 seconds; recovery is as rapid as with nitrous oxide. There are no after-effects: we have had none, and in a series of 2,200 cases only 6 complained of nausea (Lincoln, 1941).

It would seem that ethyl chloride analgesia might be useful, particularly in wartime, in the painless extraction of teeth and for such simple operative procedures as opening superficial abscesses. It is cheap, safe, and portable, with rapid induction and rapid recovery.

Summary of Conclusions

Ethyl chloride alone by oral breathing will produce analgesia—that is, a loss of sense of pain with the retention of consciousness.

The method is simple, safe, and rapid, and can for short procedures compare in every respect with nitrous oxide analgesia.

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BIBLIOGRAPHY

- Guedel, A. E. (1937). *Inhalation Anesthesia*, New York.
Hewer, C. L. (1930). *British Medical Journal*, 1, 262.
— *Recent Advances in Anaesthesia and Analgesia*, London.
Lincoln, C. W. (1941). *Anesth. & Analges.*, 20, 328.
Minnitt, R. J. (1934). *Lancet*, 1, 1278.
Striker, C., et al. (1935). *Anesth. & Analges.*, 14, 48.

Medical Memoranda

Post-scarlatinal Thrombophlebitis Migrans

Thrombophlebitis following scarlet fever is a rare event. The last reported case appears to be that of Rolleston and Ronaldson (1940). Previously Huenekens and Siperstein had recorded a case in 1923. These authors give a full review of the literature, in which they could find only 9 cases reported since 1882.

CASE HISTORY

A boy aged 11 was admitted to the East Malling Isolation Hospital on Feb. 13, 1942. He had complained of a sore throat for the past two days, and on admission showed the usual signs of mild scarlet fever. The temperature was 100°, the rash was typical, and there was marked circumoral pallor. The throat was sore, with exudate on the tonsils, and some cervical adenitis was present. The next day his temperature was normal, and he made a rapid recovery from the acute stage. He began to peel on the thirteenth day.

On Feb. 25, 12 days after admission, the cervical glands became more enlarged and there was slight pyrexia. He was given sulphapyridine 2 days later, and the temperature became normal in 48 hours. The sulphapyridine was continued for a further 5 days until a total of 11 g. had been given. At the end of this time the swelling of the glands was much less and the general condition satisfactory. Two days after this, on March 7, his temperature rose again, but there were no signs or symptoms to account for it. However, 48 hours later a painful red swelling appeared on the dorsum of the left foot, extending from the base of the great toe for 3 in. upwards.

This was 25 days after the onset of the rash. He was again given sulphapyridine. Three days later inflamed veins could be seen and felt extending from the inflamed area on the left foot up to the knee. The leg was oedematous below the knee, and the popliteal vein was tender. The tongue became furred and the boy looked ill. The next day the patient was better. The temperature was normal and there was less oedema of the left leg. A further 11 g. of sulphapyridine had been given, and the dose was reduced to 0.5 g. t.d.s.

Twenty-four hours later, however, on March 14, the temperature rose again to 100°. On examination the left leg was still improving, but the right popliteal vein was tender and there was obvious phlebitis of the superficial veins below the right knee. On the following day there was oedema of the right leg below the knee, and the right internal saphenous vein was tender below the groin. The temperature rose to 101° and the patient was seriously ill. Antiscarlatinal serum, 3,000 U.S.A. units (B.W. & Co.), was injected intramuscularly. The next morning he was better, having had a good night, and his temperature had fallen to 100°. The left leg had recovered, but the whole of the right leg was oedematous. The girth of the middle of the right thigh was $2\frac{1}{2}$ in. greater than that of the left. The right internal saphenous vein was tender and inflamed along the whole of its course, and there was tenderness in the right iliac fossa.

The patient by now had taken 33 g. of sulphapyridine since the beginning of his illness, and a blood count was made by Dr. Griffiths of the Kent County Laboratory. This showed: R.B.C., 3,860,000; Hb, 71%; C.I., 0.92; W.B.C., 15,800—polymorphs 90%, lymphocytes 7.5%, monocytes 2.5%. A blood culture proved sterile. Sulphapyridine was continued (3 g. a day), and on March 18 the girth of the right thigh was 3 in. greater than that of the left. The oedema had spread upwards over the right iliac fossa and the right loin. Enlarged superficial veins were seen over this area. The next day the patient was better. The temperature was falling and the tongue was getting cleaner. Three days later, on March 22, the temperature was normal and the oedema over the right loin and iliac fossa was much less.

On March 24 sulphapyridine was discontinued after a total of 41 g. had been given in 3 weeks without toxic effect. The patient was improving rapidly. The tongue was clean, and there was no pain or tenderness in either leg. The girth of the right thigh was only $3\frac{1}{4}$ in. greater than that of the left. A fortnight later all oedema had gone and the patient was very well. After a further fortnight's convalescence he was allowed to get up, having had a normal temperature for a month. He went home one week later, on April 28, having been in hospital 10½ weeks.

When seen on Oct. 7, 1942, he was in excellent health. The only complaint was an occasional feeling of "heaviness" in both legs, especially the right, but he was able to run and play games. There was no oedema, but the girth of the right thigh was still $1\frac{1}{2}$ in. greater than that of the left.

COMMENT

A case of thrombophlebitis migrans occurring on the twenty-fifth day after scarlet fever is described. The veins of both legs and the right external iliac vein were involved. Improvement was noted after the administration of antiscarlatinal serum, but sulphapyridine in the doses given did not appear to modify the course of the disease.

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REFERENCES

- Huenekens, E. J., and Siperstein, D. M. (1923). *Amer. J. Dis. Child.*, 26, 447.
Rolleston, J. D., and Ronaldson, G. W. (1940). *Acute Infectious Diseases*, p. 278, London.

An Unusual Retrocorneal Phenomenon

The following note on an unusual occurrence may be considered interesting enough to warrant publication.

Having removed a foreign body from the left cornea of a man aged 33, my attention was drawn to his right eye, where I saw a bright pink globule of about 1.5 mm. diameter, situated in the middle of the posterior surface of the cornea, the eye otherwise being quite normal. On examination under the slit-lamp the globule had—to my surprise—disappeared, but instead there was a faint reddish glow at the limbus about 12 o'clock. When the patient was asked to lie down again the spot was seen migrating slowly from the limbus towards the middle of the cornea, and always rose to the highest point of the anterior chamber as the eyes were turned in different directions.

The patient's record card showed that he had attended the hospital in Sept., 1942, when a foreign body deeply embedded in the stroma of the right cornea was removed and perforation with escape of aqueous occurred. Prontosil ointment 1% was instilled and a pad and bandage applied. The eye developed a mild iritis but healed in a week's time. A month later the patient complained again of photophobia and irritation, which quickly settled.

It would appear that owing to the pressure of the bandage a small portion of the prontosil ointment was forced into the anterior chamber, where it remained undissolved and unchanged without causing any trouble or inconvenience to the eye up to date (eight months). Neither the patient nor his friends have ever observed this striking appearance, since it is not visible when the patient stands upright.

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